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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named Inventor	: Michael W. Pfeiffer et al.	Appeal No.
Appln. No.	: 09/129,468	
Filed	: August 4, 1998	Group Art Unit: 3729
For	: ASSEMBLY DEVICE FOR COMPONENTS OF A DATA STORAGE SYSTEM AND METHOD OF ASSEMBLY THEREFOR	Examiner: Minh N. Trinh
Docket No.:	S01.12-0448	

SUBSTITUTE BRIEF FOR APPELLANT

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5 DAY OF December 2002
Deirdre Z Kvale
PATENT ATTORNEY

Sir:

This is an appeal from an Office Action dated March 26, 2002 in which claims 1-15 and 21-26 were finally rejected.

REAL PARTY INTEREST

Seagate Technology LLC, a corporation organized under the laws of the state of Delaware, and having offices at 920 Disc Drive, Scotts Valley, CA 95066, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as set forth in the Assignment filed with the patent application and recorded on Reel 9368, frame 0815.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF THE CLAIMS

I. Total number of claims in the application.

Claims in the application are: 21

II. Status of all the claims.

A.	Claims cancelled:	16-20
B.	Claims withdrawn but not cancelled:	none
C.	Claims pending:	1-15 and 21-26
D.	Claims allowed	none
E.	Claims allowable if amended to overcome rejection under 35 U.S.C. § 112:	11-15
F.	Claims rejected:	1-15 and 21-26

III. Claims on appeal

The claims on appeal are: 1-15 and 21-26

STATUS OF AMENDMENTS

Applicants filed a first Amendment After Final on May 24, 2002 which was not entered pursuant to an Advisory Action mailed May 31, 2002. Applicants filed a Supplemental Amendment After Final to amend the claims to address claim informalities and to simplify the issues for appeal. Applicants' Supplemental Amendment After Final was not entered pursuant to an Advisory Action mailed on July 3, 2002.

SUMMARY OF INVENTION

The present invention relates to a high capacity assembly apparatus. As shown carousels 158-1, 158-2, 154 support a plurality of assembly components for assembly. The carousels 154, 158-1, 158-2 are removably coupled to a carousel base 170 rotationally coupled to the frame 152. (Applicants' specification, Page 10, lines 1-20). The carousels 154, 158-1, 158-2 are removably coupled to the apparatus for continuous assembly operation without interruption to load components. (Applicants' specification, Page 5, lines 19-23). In particular, as illustrated in FIG. 7, the carousel base 170 includes a vacuum lock assembly 262 coupled to a vacuum source 269 to retain carousels on base 170. A vacuum is selectively supplied to engage and disengage carousels.

As shown in FIG. 4, the apparatus includes multiple carousels

158-1, 158-2 and an assembly arm 190 is selectively moved therebetween for continuous operation without interruption for loading components. (Applicants' specification, page 7, lines 18-20, page 20, lines 2-5). As illustrated in FIG. 5, a plurality of containers are removably coupled to carousels 158-1, 158-2 to load components onto the carousel for assembly. The plurality of containers are removably secured to the carousels 158-1, 158-2 via a plurality of latch assemblies 236. Thus, disc or components are loaded onto the carousel for assembly without unloading the discs from containers 172 to limit damage caused by excessive handling.

DESCRIPTION OF REFERENCES RELIED ON BY THE EXAMINER

The Examiner has rejected claims 1 and 22 based Fix, U.S. Patent No. 5,606,153, claims 2-10 based upon Fix and Tokisue, U.S. Patent No. 5,077,888, claim 22 based upon Fix, Tokisue and Hutchin, U.S. Patent No. 4,835,711 and claims 22-26 based upon Fix and Sabel, U.S. Patent No. 4,481,752.

ISSUES

I. Whether claims 1-15 are proper under 35 U.S.C.§ 112, Second paragraph as being indefinite.

II. Whether the Office Action establishes a *prima facie* basis to reject claims 1 and 21 based upon Fix under 35 U.S.C. § 102(b).

III. Whether the Office Action establishes a *prima facie* basis to reject claims 2-10 under 35 U.S.C. § 103 based upon Fix and Tokisue.

IV. Whether the Office Action establishes a *prima facie* basis to reject claim 22 under 35 U.S.C. § 103 based upon Fix, Tokisue and Hutchin.

V. Whether the Office Action establishes a *prima facie* basis to reject claims 23-26 under 35 U.S.C. § 103 based upon Fix and Sable.

GROUPING OF CLAIMS

The following groupings of claims are made solely in

the interest of consolidating issues and expediting this Appeal. No grouping of claims is intended to be nor should be interpreted as being any form of admission or a statement as to the scope or obviousness of any limitation. The claims of each group do not stand or fall together.

Group I	Claims 1 and 21;
Group II	Claims 2, 3, 4, 7 and 10;
Group III	Claims 5, 8 and 9;
Group IV	Claims 6 and 22;
Group V	Claim 23;
Group VI	Claim 24; and
Group VII	Claims 25 and 26.

ARGUMENT

I. Claims 1-15 are proper under 35 U.S.C. § 112, Second Paragraph

Claims 1-15 were rejected under 35 U.S.C. § 112, Second Paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, claim 1 and dependent claims 2-15 were rejected on the basis that the recitation of individual components in claim 1 is unclear. Claim 1 recites a carousel coupling device to removably couple a **component carousel** including a **plurality of assembly components** and a driver which moves an assembly arm to sequentially unload **individual components** from the **carousel**. Accordingly, it is clear that the carousel includes a plurality of assembly components and individual assembly components are unloaded from the carousel and assembled in a data storage device as claimed.

Claims 2-5 were rejected on the basis that the term each stack of components is unclear. Claims 2-5 recite a **carousel** supporting a **plurality of stacks of components** at spaced locations and a motor coupled to the carousel base to position **each stack of components** of the plurality of stacks of components for assembly. Thus, it is understood that each stack of components refers to

each stack of the plurality of stacks of components which is proper under 35 U.S.C. § 112

Claim 3 was rejected on the basis that the term "the carousel coupling device" lacks proper antecedent basis. Claim 3 is dependent upon claim 1 which recites in line 5 **"a carousel coupling device..."** which provides antecedent basis for the term "carousel coupling device" in dependent claim 3. Claim 21 was rejected on the basis of the term **"the unassembled device"** which, in Applicants' Supplemental Amendment After Final, Applicants amended to recite "an unassembled device" which is proper under 35 U.S.C. § 112.

II. Claims 1 and 21 are patentable over Fix under 35 U.S.C. § 102

Claims 1 and 21 were rejected under 35 U.S.C. § 102(b) as being unpatentable over Fix. The Office Action fails to consider each of the recited elements of the claims and thus fails to establish a *prima facie* basis for rejecting the claims as follows.

A. The Office Action fails to consider each of the recited elements of claim 1 as a basis for determining patentability

Claim 1 was rejected on the basis that Fix teaches an assembly arm and an assembly arm driver coupled to the assembly arm to operate the assembly arm to unload components 109. However, the Office Action fails to consider all of the claim elements recited, including a carousel base rotationally coupled to the frame and a **carousel coupling device** to removably couple a component carousel including a plurality of assembly components to the carousel base. As described in Applicants' specification, the component carousel is removably coupled to the base of the apparatus to load the carousel with components without interrupting operation of the assembly apparatus. Since the

Office Action fails to consider each of the claimed elements, the Office Action fails to establish a *prima facie* basis for rejecting claim 1 under 35 U.S.C. § 102(b) based upon Fix.

B. As properly construed Fix does not teach nor suggest each of the recited elements of claim 1

As properly construed, Fix does not teach or suggest each of the recited elements of claim 1. Claim 1 recites *inter alia* a carousel base and a carousel coupling device to removably couple a component carousel including a plurality of assembly components to the carousel base. Fix teaches a carousel 111 including a plurality of holders 109 or components. As disclosed in Fix, carousel 111 holds filter samples 107 and rotates relative to a cabinet or opening. Fix does not teach nor suggest a carousel base rotationally coupled to the frame and a coupling device to removably couple the carousel 111 to the carousel base as recited in claim 1.

C. The Office Action fails to consider each of the recited elements of claim 21 as a basis for determining patentability

Claim 21 recites *inter alia* a means for intermittently stocking an assembly apparatus with a supply of components for assembly by an assembly arm. Claim 21 was rejected on the basis that Fix discloses an assembly arm and an assembly arm driver to unload components 109 from the apparatus and load components in an unassembled device. However, claim 21 further recites a means for intermittently stocking the apparatus with a supply of components for assembly by the assembly arm. The Office Action **completely** ignores this limitation and fails to consider this limitation as a basis for determining patentability. Accordingly, the Office Action fails to establish a *prima facie* basis for rejecting claim 21.

D. As properly construed Fix does not teach nor suggest each of the recited elements of claim 21

As previously discussed, claim 21 recites a means for intermittently stocking an apparatus with a supply of components for assembly by the assembly arm. Means-plus-function language in a claim is interpreted to include the corresponding structure disclosed in Applicants' specification and equivalents. Applicants' specification discloses component carousels which are removably coupled to a carousel base on the assembly apparatus to load components for assembly. As described, the carousels can be easily removed after the carousel is emptied and replaced with a loaded or full carousel for continuous assembly operation. This is not taught nor suggested by Fix. Reconsideration of claim 21 is respectfully requested.

III. Claims 2-10 are patentable over Fix and Tokisue under 35 U.S.C. §103

A. The Office Action fails to consider each of the recited elements of claims 2-10 as a basis for determining patentability

Claims 2-10 were rejected as being unpatentable over Fix in view of Tokisue under 35 U.S.C. § 103. Claims 2-10 depend from claim 1 which recites *inter alia* a carousel base rotationally coupled to a frame and a carousel coupling device to removably couple a component carousel including a plurality of assembly components to the carousel base. The Office Action fails to establish that the combination of Fix and Tokisue teaches or suggests the recited subject matter. In particular, as previously discussed, the Office Action fails to consider each of the recited elements including a carousel base and carousel coupling device. Accordingly, the Office Action fails to establish a *prima facie* basis for rejecting claims 2-10.

B. The Office Action fails to establish a basis for rejecting claim 3 based upon the combination of Fix and Tokisue

Claim 3 depends upon claim 1 and further recites that the carousel coupling device comprises a vacuum source. As recited in the Office Action, claim 3 was rejected on the basis "that Tokisue et al. teach... a vacuum source 22,74 operatively associated with the base 1, 6" and "[i]t would have been obvious to one having skill in the art to incorporate... a vacuum source... as taught by Tokisue onto the invention of **Horning**", however it is noted that claim 3 has not been rejected based upon Horning. Furthermore, Tokisue does not teach a vacuum source coupled to a base rotationally coupled to a frame to secure a carousel including a plurality of assembly components to the base in an engaged mode and to release the carousel as claimed.

Base 1 of Tokisue is a disc or assembly component and Tokisue does not teach a vacuum source operably coupled to the disc 1 to secure a carousel including a plurality of assembly components to a carousel base (i.e., disc 1) rotationally coupled to the frame as recited in claim 3. Base 6 is a pallet and is not rotationally coupled to a frame as recited in claim 3. Tokisue teaches a vacuum gripper for a disc or assembly component. The Office Action recites that it would have been obvious to provide a vacuum source to provide means for positioning parts with respect to the base. Thus the combination of Tokisue teaches a vacuum gripper for the gripping fingers 105a, 105b of Fix for gripping parts or filters, but does teach or suggest the subject matter of the present invention.

C. The Office Action fails to consider the plurality of latch assemblies recited in dependent claims 5, 8 and 9

Claims 5, 8 and 9 are dependent upon claim 1 and recite *inter alia* a plurality of latch assemblies to removably

secure a plurality of component containers to a carousel. As described, in Applicants' specification, and illustrated in FIG. 5, carousels support a plurality of pre-packaged disc magazines or containers including a plurality of discs 116. As shown, latch members removably couple the containers including the plurality of discs to a carousel for assembly operation.

Claims 5, 8 and 9 were rejected based upon the combination of Fix and Tokisue without consideration to the specific elements recited in the claims including the plurality of latch assemblies on the carousel to removably secure a plurality of containers to the carousel as claimed. Since the Office Action fails to consider each of the recited claim elements, the Office Action fails to establish a *prima facie* basis for rejecting the claims.

D. The Office Action fails to consider the interrelation of elements recited in claim 6

Claim 6 is dependent upon claim 1 and was rejected on the basis that it would be obvious to provide a number of carousel bases coupled to the apparatus without consideration that the claim further recites that the driver moves the assembly arm between the plurality of carousel bases which recites more than a mere duplication of parts as recited in the Office Action.

IV. Claim 22 is patentable over Fix, Tokisue and Hutchin under 35 U.S.C. §103

Claim 22 was rejected under 35 U.S.C. § 103 based upon Fix, Tokisue and Hutchin. Claim 22 is dependent upon claims 1 and 6 which is not taught nor suggested by Fix or Tokisue nor the further combination of Hutchin.

V. Claims 23-26 are patentable over Fix and Sabel under 35 U.S.C. § 103

Claims 23-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fix in view of Sable. The Office Action misreads the claims and fails to examine the claims based upon the actual subject matter recited in the claims. As recited in the Office Action, claims 23-26 were rejected on the basis that Sable teaches a plurality of assembly arms on a loading apparatus. Claims 23-26 do not recite a plurality of assembly arms and accordingly, rejection of claims 23-26 based upon Sable is improper and should be removed.

Furthermore, Fix does not teach nor suggest each of the recited elements including en assembly arm driver coupled to the assembly arm to operate the assembly arm to remove **components** from **carousels** coupled to the **plurality of carousel bases**. Fix discloses carousels 111 including filters or components coupled to cabinet 108 but does not teach nor suggest carousels including components coupled to a plurality of carousel bases as is claimed.

Claims 24-26 are dependent upon claim 23 and further recite a plurality of disc unloaders coupled to the plurality of carousel bases and the plurality of carousel bases are coupled to an elevator which is not considered for patentability and thus the Office Action fails to establish a *prima facie* basis for rejecting claims 24-26.

Claims 25-26 recite **disc carousels** coupled to or supported by a **plurality of carousel bases** rotationally coupled to the frame and the carousels removably support **a plurality of disc containers**. Claim 26 further recites that the plurality of disc containers are removably supported by a plurality of latch assemblies. The Office Action fails to establish that Fix discloses *removably* supported disc containers or that Fix discloses a plurality of latch assemblies to *removably* support the

disc containers. The Office states that "Fix, Sr. et al. disclose the disc containers are being removably a plurality of latches [sic] (figure 2 of Fix, Sr. et al. shows disc containers 111 supported by latches of the casing 108)". As understood FIG. 2 does not show latches on the casing 108. Furthermore the Office Action fails to establish that Fix discloses each of the recited elements including a **plurality of disc containers** 111 **removably** supported on a **disc carousel** coupled to or supported by **a plurality of carousel bases** rotationally coupled to the frame as required by the claims.

Based upon the foregoing, Applicants respectfully request allowance of pending claims 1-15 and 21-26.

Respectfully submitted,

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Appendix A

1. An apparatus for assembling components of a data storage device comprising:

a frame;

a carousel base rotationally coupled to the frame

a carousel coupling device to removably couple a component carousel including a plurality of assembly components to the carousel base;

an assembly arm movably coupled to the frame; and

a driver coupled to the assembly arm to move the assembly arm between the carousel base and an unassembled data storage device to sequentially unload individual components from the carousel and assemble the unloaded components into the data storage device.

2. The apparatus of claim 1 wherein the carousel supports a plurality of stacks of components at spaced locations arranged about a center point and the apparatus comprises:

a motor coupled to the carousel base to rotationally position each stack of components for assembly.

3. The apparatus of claim 2 wherein the carousel coupling device comprises a vacuum source operably coupled to the rotatable carousel base to supply vacuum pressure in an engaged mode to secure the carousel to the carousel base and to release the vacuum pressure to remove the carousel.

4. The apparatus of claim 2 further comprising an indexer coupled to the carousel base to align individual components from the plurality of stacks of components relative to the assembly arm.

5. The apparatus of claim 2 and including a carousel coupled to the carousel base and a plurality of elongated components container configured to contain a plurality of components and the carousel includes a plurality of latch assemblies to removably secure the plurality of containers at spaced locations about a rotation axis of the carousel base.

6. The apparatus of claim 1 wherein the apparatus includes a plurality of carousel bases rotationally coupled to the frame to support multiple component carousels and the driver moves the assembly arm between the multiple component carousels on the plurality of carousel bases to unload the multiple carousels on the plurality of carousel bases.

7. The apparatus of claim 1 and further comprising a disc carousel removably coupled to the carousel base adapted to support discs for assembly in a spindle motor of a data storage device.

8. The apparatus of claim 7 wherein the disc carousel includes a plurality of spaced latch assemblies about a circumference of the disc carousel to removably connect a plurality of disc containers storing a plurality of stacked discs to the disc carousel at concentric spaced locations.

9. The apparatus of claim 8 wherein the disc containers include covers and the apparatus includes means for removing disc container covers prior to assembling discs housed in the disc container.

10. The apparatus of claim 1 and further comprising a spacer carousel adapted to support spacers for assembly in a spindle motor of a data storage device.

11. The apparatus of claim 1 wherein the apparatus is adapted to assembly components of a disc stack supported by a spindle motor and further comprising:

a plurality of carousel bases including a carousel base adapted to support a component carousel for discs and a carousel base adapted to support a component carousel for spacers;

a plurality of assembly arms including an assembly arm coupled to the carousel base supporting the component carousel for discs to assemble the discs and an assembly arm coupled to the carousel base supporting the component carousel for spacers to assemble the spacers;

a plurality of drivers coupled to the plurality of assembly arms to move the assembly arms between the carousel bases and a loading station; and

a controller coupled to the drivers of the assembly arm to coordinate operation of the plurality of assembly arms to alternately assemble discs and spacers.

12. The apparatus of claim 11 wherein the component carousel for the discs includes a frame including a plurality of circumferentially spaced latch assemblies to removably couple a plurality of disc containers to the carousel.

13. The apparatus of claim 12 wherein the disc containers house a disc stack including a plurality of coaxially aligned discs and further comprises an indexer to incrementally position the carousel base removably supporting the carousel for discs to sequentially unload individual discs in the disc stack.

14. The apparatus of claim 11 wherein the component carousel for spacers includes a base including a plurality of spacer posts arranged about a center point and sized to support a plurality of stacked spacers and including a motor coupled to the carousel base to move the carousel to align sequential stacks of spacers for assembly.

15. The apparatus of claim 14 further comprising an index rod operably coupled to the component carousel for spacers to push the spacers towards an extended end of the posts for assembly.

21. An assembly apparatus comprising:

an assembly arm and assembly arm driver operably coupled to the assembly arm to operate the assembly arm to unload components from the apparatus and load components in the unassembled device; and

means for intermittently stocking the apparatus with a supply of components for assembly by the assembly arms.

22. The apparatus of claim 6 wherein the apparatus includes a detector and the assembly arm is coupled to a controller which is configured to shift operation of the assembly arm from one of the multiple carousels to another of the multiple carousels supported on the plurality of carousel bases.

23. An assembly apparatus comprising:

a frame;

a plurality of carousel bases rotationally coupled to the frame;

an assembly arm movably coupled to the frame;

an assembly arm driver coupled to the assembly arm to operate the assembly arm to unload components from carousels coupled to the carousel bases; and

a controller operably coupled to the assembly arm and configured to sequentially operate the assembly arm between the plurality of carousel bases.

24. The apparatus of claim 23 wherein the plurality of carousel bases support disc carousels and further comprising a plurality of disc unloaders coupled to the plurality of carousel bases and the assembly arm is operably between the plurality of disc unloaders and the plurality of carousel bases are coupled to an elevator to position sequential stacked discs on the disc carousels relative to the plurality of disc unloaders.

25. The apparatus of claim 24 wherein the disc carousels removably support a plurality of disc containers including a plurality of stacked discs.

26. The apparatus of claim 25 wherein the disc containers are removably supported by a plurality of latch assemblies.